UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,450	11/14/2001	Martin Fuenfgeld	24564	6674

20529 7590 02/14/2003

NATH & ASSOCIATES
1030 15th STREET
6TH FLOOR
WASHINGTON, DC 20005

EXAMINER	
MILLER, BRANDON J	
ART UNIT	PAPER NUMBER
2683	

DATE MAILED: 02/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/987,450	FUENFGELD ET AL.	
	Examiner	Art Unit	
	Brandon J Miller	2683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burger in view of Purdue.

Regarding claim 1 Burger teaches a wireless measuring device for level measuring and an antenna for emitting a sampled signal into a volume and for picking up an effective echo signal reflected by a volume (see abstract and col. 2, lines 16-20 and Fig. 1). Burger teaches a receiver for evaluating an echo signal supplied by an antenna (see col. 3, lines 31-33) and an antenna connected to a coupler (see col. 2, lines 12-14). Burger does not teach a transceiver unit with a transmitter for generating a sampled signal, a signal composed of an echo signal and an unwanted echo signal, a receiver that upon receiving a sample signal provides a correction signal proportional to an unwanted echo signal in proportion to a correction signal, or one or more couplers that heterodyne the signals whereby the unwanted echo signal is cancel each other. Purdue teaches a transceiver unit with a transmitter for generating a sampled signal (see pg. 5, lines 54-55). Purdue teaches a receiver for evaluating an echo signal and a signal composed of a transmit signal and an unwanted echo signal (see col. 55-63, col.6, lines 15-17). Purdue teaches a receiver that upon receiving a sample signal provides a correction signal (see col. 5, lines 5-7, col. 13, lines 65-67 and col. 14, lines 2-4). Purdue also teaches a receiver that upon receiving a

sample signal supplies an unwanted echo signal in proportion to a replica signal and an amplifier that heterodyne the signals so that the unwanted echo signal is cancelled (see abstract, col. 6, line 52-54 and col. 18, lines 46-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the Burger adapt to include a transceiver unit with a transmitter for generating a sampled signal, a signal composed of an echo signal and an unwanted echo signal, a receiver that upon receiving a sample signal supplies an unwanted echo signal in proportion to a correction signal, and an amplifier that heterodyne the signals so that the unwanted echo signal is cancelled because this would allow for an echo signal to be transmitted and received without the presence of undesired interference.

Regarding claim 8 Burger teaches a mixer between an antenna and a coupler for converting an echo signal to an intermediate frequency (see col. 2, lines 6-14 and col. 5, lines 3-12). Burger does not teach an echo signal that is a radio signal. Purdue teaches an echo signal that is a radio signal (see col. 3, lines 54-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the Burger adapt to include an echo signal that is a radio signal because this would allow for a radio signal to be transmitted and received without the presence of undesired interference.

Claims 4-5, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burger in view of Purdue and Adler.

Regarding claim 4 Burger and Purdue teach a device as recited in claim 1 except for a transceiver unit, wherein the antenna simulation is a network of complex impedances. Adler teaches a transceiver unit, wherein the antenna simulation is a network of complex impedances (see col. 14, lines 25-34). It would have been obvious to one of ordinary skill in the art at the

time the invention was made to make the Burger and Purdue adapt to include a transceiver unit, wherein the antenna simulation is a network of complex impedances because this would allow for an echo ranging system that processes and identifies return echo signals.

Regarding claim 5 Burger and Purdue teach a device as recited in claim 1 except for a power splitter that distributes a sampled signal with respective equal power to an acquisition antenna and an antenna simulation. Adler teaches a power splitter that distributes a sampled signal with respective equal power to two antennas (see col. 4, lines 60-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the Burger and Purdue adapt to include a power splitter that distributes a sampled signal with respective equal power to an acquisition antenna and an antenna simulation because this would allow for the supply and distribution of energy to two antennas.

Regarding claim 7 Burger and Purdue teach a device as recited in claim 1 except for a correction signal as a 180° phase quadrature to an unwanted echo signal. Adler teaches a correction signal as a phase quadrature of an unwanted reflected signal (see col. 12, lines 58-63). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the Burger and Purdue adapt to include a correction signal as a 180° phase quadrature to an unwanted echo signal because this would allow for an undesired signal to be completely cancelled by another.

Regarding claim 9 Burger and Purdue teach a device as recited in claim 1 except for a waveguide ring with four connection, which respectively are connected through corresponding waveguide sections the length of which respectively correspond to one-quarter of a wavelength of a sampled signal, an acquisition antenna and an antenna simulation that are connected to

adjacent ones of a connection, or a transmitter and a receiver jointly connected to another of connections adjacent to a connection of an acquisition antenna or antenna simulation of an adjacent connection. Burger does teach a waveguide system with connection ports (see col. 6, lines 11-14 and Fig. 2). Burger does teaches a transmitter and a receiver jointly connected to an antenna (see col. 2, lines 15-20 and Fig. 1) and lengths of wave sections, which have a frequency that is some multiple of the wavelength of a sampled signal (see col. 2, lines 45-47). Adler teaches a two antennae object detection system with a transmitter and a receiver jointly connected to an adjacent connection (see col. 4, lines 25-26 & 29-30 and FIG. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the Burger and Purdue adapt to include a waveguide ring with four connection, which respectively are connected through corresponding waveguide sections the length of which respectively correspond to one-quarter of a wavelength of a sampled signal, an acquisition antenna and an antenna simulation that are connected to adjacent ones of a connection, or a transmitter and a receiver jointly connected to another of connections adjacent to a connection of an acquisition antenna or antenna simulation of an adjacent connection because this would allow for a phase controlled signal which produces a signal structure that is symmetrical.

Claims 2, 3, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burger in view of Purdue, Diede and Adler.

Regarding claim 2 Burger and Purdue teach a device as recited in claim 1 except a second antenna that emits into an absorber. Diede teaches a second radar system that emits into an absorber (see abstract, col. 2, lines 49-54 and col. 3, lines 7-9). Adler teaches an object detection system with a second antenna (see col. 4, lines 25-26 & 29-30 and FIG. 1). It would have been

obvious to one of ordinary skill in the art at the time the invention was made to make the Burger and Purdue adapt to include a second antenna that emits into an absorber because this would allow for a signal to be transmitted without having reflective properties.

Regarding claim 3 Adler teaches two antenna of similar design (see col. 4, lines 25-26 & 29-30 and FIG. 1).

Regarding claim 6 Burger, Purdue, Diede, and Adler teach a device as recited in claim 2 except for a power splitter for distributing power to an acquisition antenna and a simulation antenna, a power splitter for feeding power from a sampled signal to an antenna simulation and an acquisition antenna, and one antenna with a different reflectivity from another. Burger does teach degrees of reflectivity (see col. 1, lines 34-35) and a reflective antenna (see col. 2, lines 19-20). Diede does teach a radar system that emits into a substance with reflective properties and a radar system that emits into a substance with absorbing properties (see abstract, col. 2, lines 49-54 and col. 3, lines 7-9). Adler does teach an object detection system with a second antenna (see col. 4, lines 25-26 & 29-30 and FIG. 1). Adler does teach a power splitter that distributes a sampled signal with respective equal power to two antennas (see col. 4, lines 60-65). It would have been obvious to make the Burger, Purdue, Diede and Adler adapt to include a power splitter for distributing power to an acquisition antenna and a simulation antenna, a power splitter for feeding power from a sampled signal to an acquisition antenna and antenna simulation, and one antenna with different reflectivity from another because this would allow sampled signals to be sent to an antenna with equal reflective properties.

Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Long U.S. Patent No. 5,406,552 discloses a device and method for linear listener echo cancellation.

Groenenboom U.S. Patent No. 5,329,284 discloses a radar apparatus.

Nash U.S. Patent No. 6,397,044 discloses a transceiver.

Kawano U.S. Patent No. 5,369,782 discloses a radio relay system including interference signal cancellation.

Woodward U.S. Patent No. 6,169,706 discloses echo detection in pulse-echo ranging systems.

Doran U.S. Patent No. 5,911,124 discloses a method and apparatus for applying echo mitigation in a communication device.

Romesburg U.S. Patent No. 5,903,819 discloses a noise suppressor circuit and associated method for suppressing periodic interference component portions of a communication signal.

Wartmann EP 0 780 665 A2 discloses a processor apparatus and method for a process measurement signal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandon J Miller whose telephone number is 703-305-4222. The examiner can normally be reached on Mon.-Fri. 8:00 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Trost can be reached on 703-308-5318. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

***

February 7, 2003

WILLIAM TROST
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600